

Homework #3: (Chapter 2: Optimal Codes)**Chapter 2 Exercises: 2.3, 2.7, 2.9 (26%)****Exercise 2.3 (8%)**

Construct a binary Huffman code for a source with probabilities

$$p_i = 0.4, 0.3, 0.1, 0.1, 0.06, 0.04,$$

and find its average word-length. To what extent are the code, the word-lengths, and the average word-length unique?

Exercise 2.7 (10%)

Find binary and ternary Huffman codes for a source with probabilities

$$p_i = 0.3, 0.2, 0.15, 0.1, 0.1, 0.08, 0.05, 0.02.$$

Find the average word-length in each case.

Exercise 2.9 (8%)

Let S be the source in Examples 2.11 and 2.12. Find the probability distribution for S^3 , and show that a binary Huffman code C^3 for S^3 has average word-length $L_3 = L(C^3) = 76/27$.